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The Hilbert problem: The case of infinitely many discontinuity points of coefficients

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Abstract

We obtain a solution to the Hilbert boundary value problem in the theory of analytic functions on the half-plane in the case that the coefficients of the boundary condition have countably many discontinuity points of the first kind. We elaborate the two substantially different situations: the series consisting of the jumps of the argument of the coefficient function and the increments of its continuous part converges and this series diverges. Accordingly, Hilbert problems with finite and infinite indices result. We derive formulas for the general solution and investigate the pictures of solvability of these problems. © 2008 Pleiades Publishing, Ltd.

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